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about Cotuit. I saw no other species of *Lechea* abundant there; though *L. major*, Mchx., and *L. thymifolia*, Pursh, (*L. Novae-Caesareae*, Austin), are found in the vicinity. *L. maritima* was constantly under my eyes, but I never saw the flowers opened, till on a bleak, sunless day, during a northeasterly gale, about the 18th of August, I noticed that the *Lecheas* in a hollow through which I was passing were all in bloom. So different was the aspect of the plant, that it at once arrested attention. The next day, and the next, I found other patches in bloom, patches with which I was familiar, as they were near the house. Rosa, a child of ten, who knew pin-weed quite well, brought me a piece of the full-blown plant to learn its name. She did not recognize it in its new dress. The small petals were of a brownish-red, but the conspicuous stigmas were white with a yellowish tinge. This is the only time I have seen *Lechea* in full bloom.

W. H. L.

§ 113. **A large Grape-vine.**—In a wooded ravine near Egbertville, Staten Island, there is a vine of *Vitis cordifolia*, Michx., having a circumference of twenty-five and one-half inches at a point three feet above its base. It completely covers three cedar trees, each at least thirty feet high, and is a very beautiful plant.

N. L. B.

§ 114. **Cheilanthes myriophylla**, Desv.—I desire specimens of this fern, *with root-stocks*, from Mexico or South America, for a special study of the *Myriophylla-Fendleri* group of *Cheilanthes*.

I will be glad to communicate with any one who can put me in the way of obtaining them, and to return specimens of other species in exchange. Address,

Medford, Mass., U. S. A.

GEO. E. DAVENPORT.

§ 115. **Woodsia obtusa**, Torrey.—I would like to obtain some full suites of specimens of this species in different stages of development, from the Middle, Southern, or South-western States, and will be glad to make such exchanges for them as I can.

Medford, Mass.

GEO. E. DAVENPORT.

§ 116. **Botanical Notes.**—*A Locomotive Dicotyledon.*—An interesting case of voluntary motion among dicotyledonous plants, in a species of *Loranthus*, has been discovered by Dr. G. Watt, of the Educational Department, Bengal Lower Provinces, and made known in a recent number of the *Gardeners' Chronicle*. It is only while the seed is germinating that the motion takes place, but the mode of travelling is very peculiar and quite different from that of any other known plant. The plant is a native of Bengal, and like all other members of the genus is parasitical, growing upon a few evergreen trees, particularly upon some species of *Memecylon*. The fruit, like that of its relative, the mistletoe, and nearly all other members of the order, consists of a mass of very viscid pulp surrounding a single seed, and on separating from the parent plant adheres to whatever it may chance to fall upon, and after a time begins to germinate. It is

only during the first stage of germination that the motion to be described takes place, and it is evident that the power of being able to move about is to enable the plant to find a suitable place to grow upon. The radicle at first grows out, and when it has attained a length of about an inch it develops upon its extremity a flattened disk, and then curves about until the disk is applied to any object that is near at hand. If the spot upon which the disk fastens is suitable for further development of the plant, germination continues, and no locomotion takes place; but if, on the contrary, the spot should not be favorable, the germinating embryo has the power of changing its position. This is accomplished by the adhesive radicle raising the seed and advancing it to another spot; or, to make the process plainer, the disk at the end of the radicle adheres very tightly to whatever it is applied; the radicle itself straightens and tears the viscid berry away from whatever it has adhered to, and raises it in the air. The radicle then again curves and carries the berry to another spot, where it again fixes itself. Dr. Watt says he has seen this repeated several times, so that to a certain extent the young embryo, still within the seed, moves about. It seems to select certain places in preference to others, particularly the leaves, which in the *Memecylon* are evergreen and very dense. The berries on falling are almost certain to alight on the leaves, and, although many germinate thereon, they have been frequently observed to move off the leaves on to the stems, and finally fasten there.

*Fertilization of Clover.*—Meehan's *Gardener's Monthly* for September contains, as usual, some matters of special interest to botanists. Prof. J. W. Beal gives the result of three years' experiments to ascertain whether red clover not visited by bees will produce seeds. The experiments were made by covering some heads and comparing them with others uncovered. It would appear that the covered heads often produced a considerable number of seeds; but, as sometimes they produced none, and, "in nearly every case, the heads which were covered soon fall to the ground, where they remain until ripe," the experiments seem inconclusive and require to be repeated with more care and with a larger number. The germinating powers of the seed should also be tested.\*

*Gordonia pubescens.*—In the same number of the *Gardener's Monthly*, Mr. Ravenel gives a history of the discovery and loss of *Gordonia pubescens*, L'Her., which was last seen in the uncultivated state, by Moses Marshall in 1790, as stated in a letter in Darlington's Memorials of Bartram and Marshall, which does not seem to be referred to by Watson in his Bibliography.

*A monstrous Cypridium.*—In the September number of The *Druggist*, Chicago, Professor Bastin describes and figures a monstrous *Cypripedium* found last June in the pine barrens at the southern end of Lake Michigan. It had all three sepals distinct and of equal size, and the three nearly equal petals were shaped alike, differing from the sepals only in being a little narrower and of course al-

\* In an editorial Mr. Meehan refers to these experiments in corroboration of his own experiments and conclusions that there are many reasons why clover does not seed, aside from mere questions of pollinization.

ternating with them. The ovary was not twisted, and only slightly bent to one side, so that the flower faced more nearly upward than in the ordinary form. The column, as usual, consisted of united stamens and pistils, but it was much less bent to one side, and the union of parts was not nearly so complete. There were three distinct anthers instead of two, alternating with the lobes of the distinctly three-lobed stigma. Instead of one large, dilated, triangular, fleshy body, apparently occupying the place of the third stamen in the ordinary form, and heretofore supposed, in fact, to be homologous with the third stamen, there were two of these bodies alternating with the petals and evidently belonging to a distinct whorl. They may really be the homologues of stamens, but, if so, the plan of the flower contemplates two distinct sets of stamens; or we may regard them as petals belonging to an inner whorl that alternates with the first. *C. spectabile* with a double labellum is recorded in BULLETIN iii, 33.

§ 117. **Botanical Literature.**—*Botany for High Schools and Colleges*, by Chas. E. Bessey.—American Science Series, Henry Holt & Co., N. Y.—This book has been more than year before the public, and has, we have been assured, been found of great practical value. It may not, however, be too late for us to record our sense of its merits. It is thus far the only work which affords to students in this country a full introduction to the latest results of vegetable biological studies, within moderate compass and at moderate cost. Professor Bessey is the botanical instructor in the Iowa Agricultural College, and he has learned by experience what are the needs of American students, and constantly refers to native plants for his illustrations. The first twelve chapters are devoted to vegetable biology in the more limited sense, from protoplasm, cells, tissues and organs to the chemistry of plants and their relations to external agents. This part is founded mainly upon Sachs's *Lehrbuch*, though frequent reference is made to other recent authorities, but as Prof. Bessey is himself an investigator and has to teach others to investigate (which indeed is the leading idea of his book), he by no means follows his authors in a servile manner. It seems to us, nevertheless, that he is a little infected with German dryness as is not unnatural in a first edition of a book on a technical subject, in which the Germans are masters. The book was intended as a companion for the laboratory, and as such, perhaps, we should not complain of it, but it was also intended for the general reader, and in his interest we recommend a little greater solution of the solid contents. For it must be borne in mind that many will want to learn from this book who have not the advantage of witnessing Professor Bessey's skill in working. In our country many take up the study of botany as a relaxation, knowing nothing of the use of the microscope or the method of preparing objects for it. It would be well, then, we think, in a work of this class, to give some instruction, at least of an introductory character, on these subjects. What with compound and binocular microscopes, section-cutters, polarizers, apparatus for mounting slides, and other accessories, the beginner is deterred from beginning; and yet much good work is done in Germany without these. Some account of the best form of a simple